

What is claimed is:

1. An electrochemical gas sensor that draws a gas to be measured into an electrolyte solution through a permeable membrane and measures the concentration of said gas to be measured by an electrolytic current that flows between an electrode catalyst layer formed on one side of said permeable membrane and a counter electrode,
 - 5 wherein said permeable membrane is formed from a mixture of a carbon black powder and a fluorine resin powder, and said electrode catalyst layer is formed on the side of said permeable membrane in contact with the electrolyte solution.
- 10 2. An electrochemical gas sensor in accordance with claim 1, wherein said gas to be measured is diborane (B_2H_6), germane (GeH_4), silane (SiH_4), arsine (AsH_3), hydrogen selenide (SeH_2), or phosphine (PH_3).
- 15 3. An electrochemical gas sensor in accordance with claim 1, wherein said gas to be measured is nitrogen dioxide (NO_2).
4. An electrochemical gas sensor in accordance with claim 1, wherein said electrolyte solution is sulfuric acid.
- 20 5. An electrochemical gas sensor in accordance with claim 4, wherein the concentration of said electrolyte solution is 1 to 11.5 mol/dl.
6. An electrochemical gas sensor comprising:

a working electrode that reacts with a gas to be measured, consisting of a hydrophobic, electrically conductive membrane that is permeable by said gas to be measured and an electrode catalyst layer formed on one side thereof;

5 a counter electrode consisting of a hydrophobic, electrically conductive membrane and an electrode layer formed on one side thereof;

 a container that holds an electrolyte solution, and;

 two leads that extract a measurement signal from said working electrode and said counter electrode;

 wherein one lead is disposed so as to be in contact with the side of said working

10 electrode on which said electrode catalyst layer is not formed, and the other lead is disposed so as to be in contact with the side of said counter electrode on which said electrode layer is not formed, with said leads being pressed against said membranes by constituent elements of said container.

15 7. An electrochemical gas sensor in accordance with claim 6, wherein said membranes are formed from a mixture of a carbon black powder and a fluorine resin powder.

8. An electrochemical gas sensor in accordance with claim 6, wherein at least a portion of said container is constituted from electrically conductive material, with the area of said 20 electrically conductive material being arranged to be in contact with the surfaces of said membranes on which electrodes are not formed, so that said container incorporates the function of said leads.